

PATENT SPECIFICATION

Application Date: July 11, 1932. No. 19,545/32.

384,603

Complete Accepted: Dec. 8, 1932.

COMPLETE SPECIFICATION.

Improvements in and connected with Apparatus for Utilising the Energy of Waves.



I, MICHEL JEAN ABIGERAIGE, of P.O. Box No. 62, Ibadan, Nigeria, West Africa, of Libanese nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to apparatus for utilizing the energy of waves and has for its object to provide an improved construction of such apparatus.

The type of apparatus for utilizing the energy of waves to which this invention relates particularly is that which comprises a depending pivoted or hinged vane adapted to be swung on its pivot by the waves and means whereby the motion of the vane is transmitted to a shaft.

According to the invention apparatus of the above specified type comprises a plurality of connected pairs of depending pivoted or hinged vanes adapted to actuate levers which transmit motion, imparted to the vanes by the waves, through a connecting rod, rocking lever, connecting link and crank to a shaft whereby power is transmitted to a dynamo or the like.

Desirably in order to utilize fully the energy of each wave the apparatus includes a plurality of units each of which comprises a number of connected pairs of vanes. Conveniently a vane of each connected pair of vanes is provided with a lever which is oscillated by the motion imparted to the vane by the waves, the levers from a plurality of pairs of vanes being connected and adapted to reciprocate the connecting rod which in turn transmits its motion to the shaft by means of the rocking lever, connecting link and crank.

The invention is illustrated diagrammatically in the accompanying drawing in which Fig. 1 is an elevation and Fig. 2 a plan view of the improved apparatus for utilizing the energy of the waves, the lateral motion of the waves being indicated by arrows in Fig. 2. Fig. 3 is a section on the line A—B of Fig. 1.

As shown the improved apparatus comprises two units each comprising, in the

embodiment illustrated, a series of depending pivoted or hinged vanes 1—4 and 5—8. The vanes 1—4 of a unit are journaled at one end in a wall 9 erected in the sea at a convenient distance from the shore and at the other end in a wall 10 located between the wall 9 and the shore, the vanes 5—8 of the other unit being journaled at one end in the wall 10 and at the other in a wall 11 located approximately at the shore. A wall 12 extending say at right angles to the walls 9 to 11 may form a rear surface on which the wave will strike and rebound.

As indicated, pairs of vanes 1 and 2, 3 and 4, 5 and 6 and 7 and 8 are connected at their lower ends by means of chains 13 and one of the vanes of each connected pair is connected, as indicated in Fig. 2, by means of a lever 15 and a connecting rod 16 with a rocking lever 17 suitably supported and serving to transmit motion through a connecting link 18 and crank 19 to a shaft 20 fitted with a flywheel 21. The shaft 20 serves to drive a dynamo or the like.

In the embodiment illustrated the levers 15 on the vanes 1, 3, 5 and 7 operate on a common connecting rod 16.

In operation of the apparatus the wave will strike vanes 1 and 5, causing them to swing inwards, thereby causing the levers 15 to move outwards and thereby moving the connecting rod 16 outwards and imparting rotation to the shaft 20 and returning the vanes 1 and 5 to their initial position. At the same time the wave has reached and strikes the vanes 2 and 6, swinging them about their pivots and through the medium of the chains 13 pulling the lower ends of the vanes 1 and 5 rearwards, causing the levers 15 to move outwards and thereby moving the connecting rods outwards and imparting rotation again to the shaft 20. The same process is repeated with the vanes 3, 4 and 7, 8 etc. The wave retreats, is reformed and the process commences again.

In practice, in order to ensure continuity of operation, two such energy utilising apparatus or stations will be provided, one for the flow tide and the other for the ebb, and located one at a

higher level than the other.

The dynamo may be so located relatively to the stations that it will be driven by the one apparatus as soon as the other
5 apparatus ceases to function due to the ebbing of the tide.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to
10 be performed, I declare that what I claim is:—

1. Apparatus for utilising the energy of the waves comprising a plurality of depending pivoted or hinged vanes
15 arranged in pairs connected together and adapted to actuate levers which transmit the motion imparted to the vanes by the waves through a connecting rod, rocking

lever, connecting link and crank to a shaft whereby power is transmitted to a dynamo or the like.

2. Apparatus as claimed in claim 1 which includes a plurality of units each of which comprises a number of connected pairs of vanes.

3. Apparatus for utilising the energy of the waves constructed and arranged for operation substantially as described with reference to the annexed drawing.

Dated this 11th day of July, 1932.
CRUIKSHANK & FAIRWEATHER,
65—66, Chancery Lane London, W.C.2,
and

29, St. Vincent Place, Glasgow,
Agents for the Applicant.

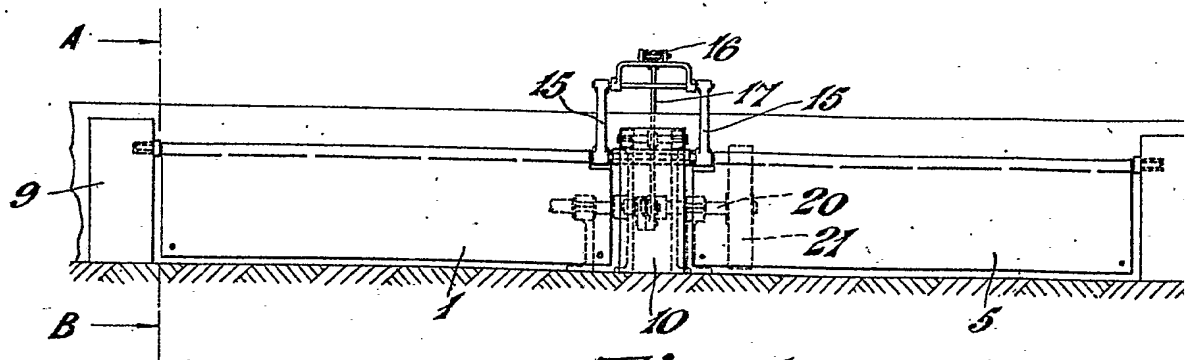


Fig. 1.

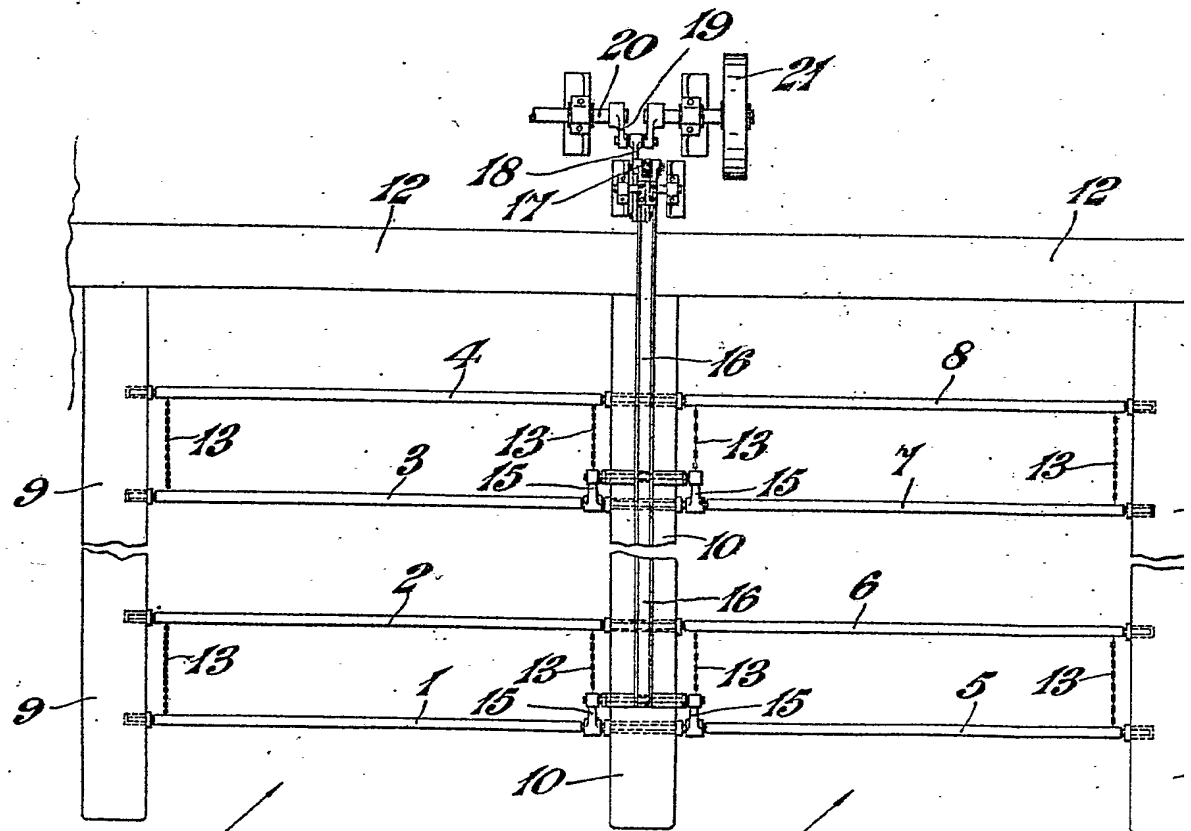


Fig. 2.

[This Drawing is a reproduction of the Original on a reduced scale.]

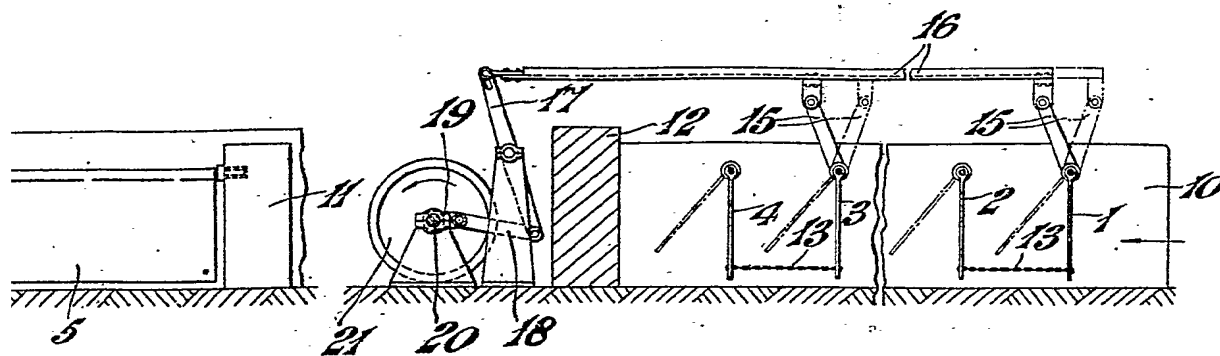
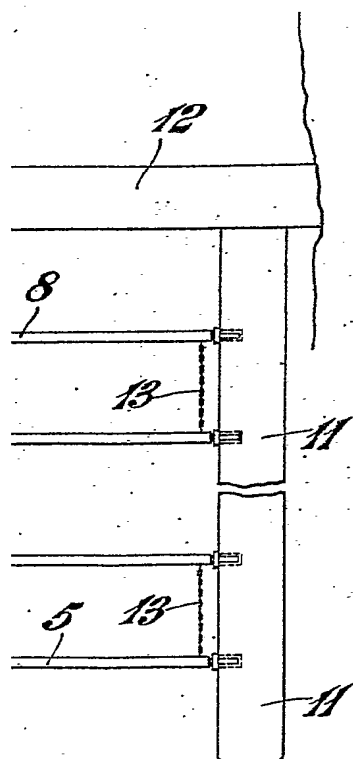


Fig. 3.



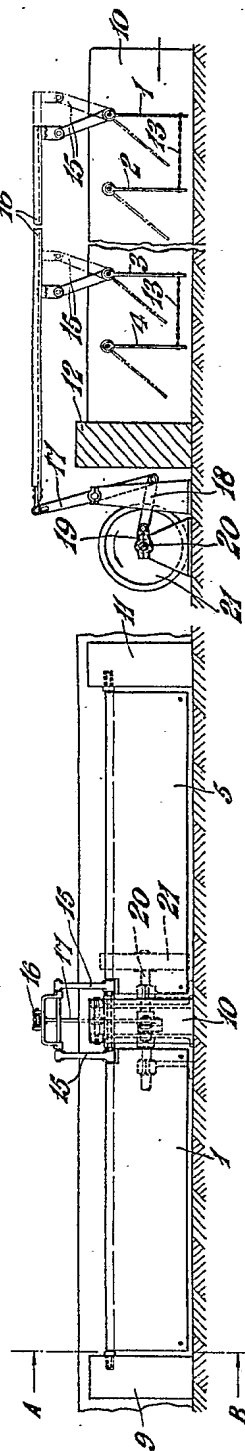


Fig. 1.

Fig. 3.

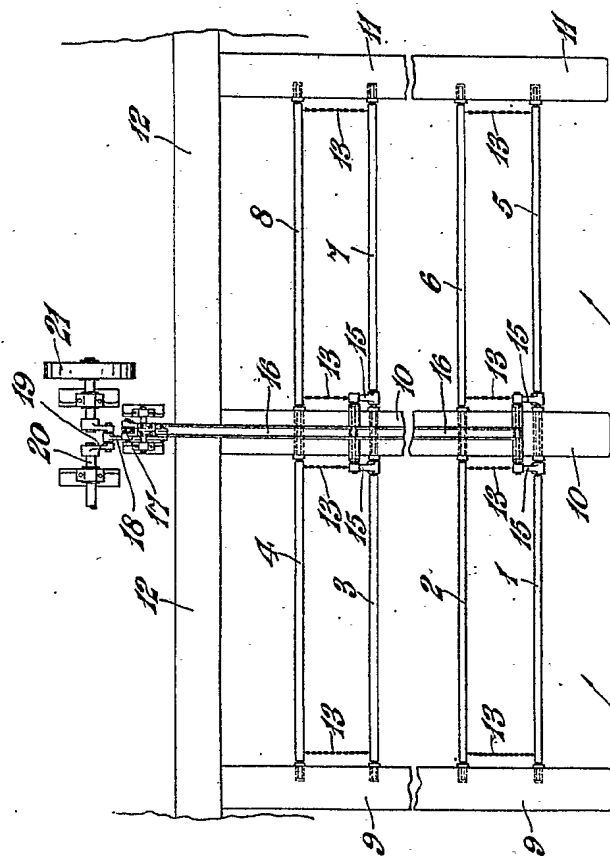


Fig. 2.

[This Drawing is a reproduction of the Original on a reduced scale]